Capability Guide

August 2012

MOTOTRBO™ IP Site Connect

Avtec's Scout VoIP console system supports MOTOTRBO™ IP Site Connect which provides the capability to create a wire-line connection to Motorola's MOTOTRBO™ professional, digital two-way radio system. The IP Site Connect conventional radio solution provides a method for communicating across dispersed geographical locations or physical barriers to extend the reach of a conventional two-way radio system.

Scout is the only MOTOTRBO™ IP Site Connect console to offer a native IP interface directly to the repeater infrastructure, working as a peer.

Capabilities-at-a-Glance

In addition to all the standard features of Scout Console, the following MOTOTRBO™ IP Site Connect features are available to the dispatcher:

Capability	Description
Activity History with Instant Recall Recorder (IRR)	Activity History and IRR are Scout tools that let the dispatcher see a list of past conversations and replay audio from past conversations for analysis or clarification using Instant Recall Recorder. Instant Recall Recorder is an optional feature of Scout.
Alert Tones	Scout has the capability to generate alert tones to various endpoints, including P25 radios. These tones include: ■ Channel Marker ■ Keying Tones ■ Guard Tones ■ Function Tones Scout can also send alert tone specifications as an alternative to .wav files for an endpoint. This is primarily used for P25 endpoints but can also be used for other conventional endpoints, when alert tone .wav files cannot produce the desired audible tone.
Auto Contact Pad	An Auto Contact Pad initiates a unit call or unit alert using a preconfigured touch pad on the Scout Console screen.
Channel Marker	A Channel Marker is a tone that is transmitted by the Scout Console to alert users that the selected channel has been placed in a priority status and routine transmissions should not be made on that channel.

Capability	Description
Connection	Scout uses a wire-line console interface through a direct IP connection to Motorola XPR™ 8300/8400/8380 and MTR3000.
Emergency Call / State	An Emergency State alerts the dispatcher of an emergency declaration from a subscriber unit on the associated talkgroup icon. An Emergency Call is a call with a higher priority level than a regular call. When pressed, the emergency button on a subscriber unit signals Scout to perform two actions: ■ An emergency alarm is sent to the Scout Console, which can only be cleared by touching the Emergency Clear pad on the console screen. ■ An emergency call is created at the Scout Console.
Group Call	Group Calls allow the Scout Console to affiliate with a group of subscriber radios for the purpose of establishing voice communication between the dispatcher and the group of subscribers. All members of the group hear the conversation.
Keying Progress Indications	Scout presents an audible indication to the dispatcher for Granted, Queued, Failed, or Canceled PTT requests.
Patch	Patching lets a dispatcher connect a group or unit to other radio or telephone endpoints so that the subscriber units can communicate with units using other communication methods. This establishes a communication path between two or more radio or telephone endpoints that are normally unable to communicate with each other.
PTT ID with Alias	PTT ID displays the subscriber unit ID on the associated endpoint pad and in the Activity History. PTT ID Alias changes the PTT ID from a numerical ID to an alphanumeric string. For example, PTT ID 2527 can be displayed as "Fire Engine 27."
Unit Alert	A Unit Alert contacts either the dispatcher or a subscriber. If the person was away from the console or radio, the alert displays an indication that someone tried to make contact. The alert could also be a short text message to the dispatcher or the subscriber.
Unit Call	A unit-to-unit call establishes a private voice call between the dispatcher and an individual subscriber radio. Scout can initiate and receive unit-to-unit calls between the console and individual subscriber units.
Unit Check	A Unit Check is a signal to the field that verifies that the unit is in working order and in range of the radio signal.
Unit Monitor	The Unit Monitor feature allows the Scout Console to activate a subscriber unit's monitor mode remotely and listen to any audio that originates from the subscriber unit location.
Unit Stun / Revive	The Unit Stun feature allows the Scout Console to send a network signal to a mobile radio that disables the unit. The Unit Revive feature allows the Scout Console to reverse a Unit Stun by sending a network signal to a stunned (disabled) radio that enables the unit.

Note: To ensure reliable operation with Scout, use MOTOTRBO™ IP Site Connect firmware version 1.9.

Connections

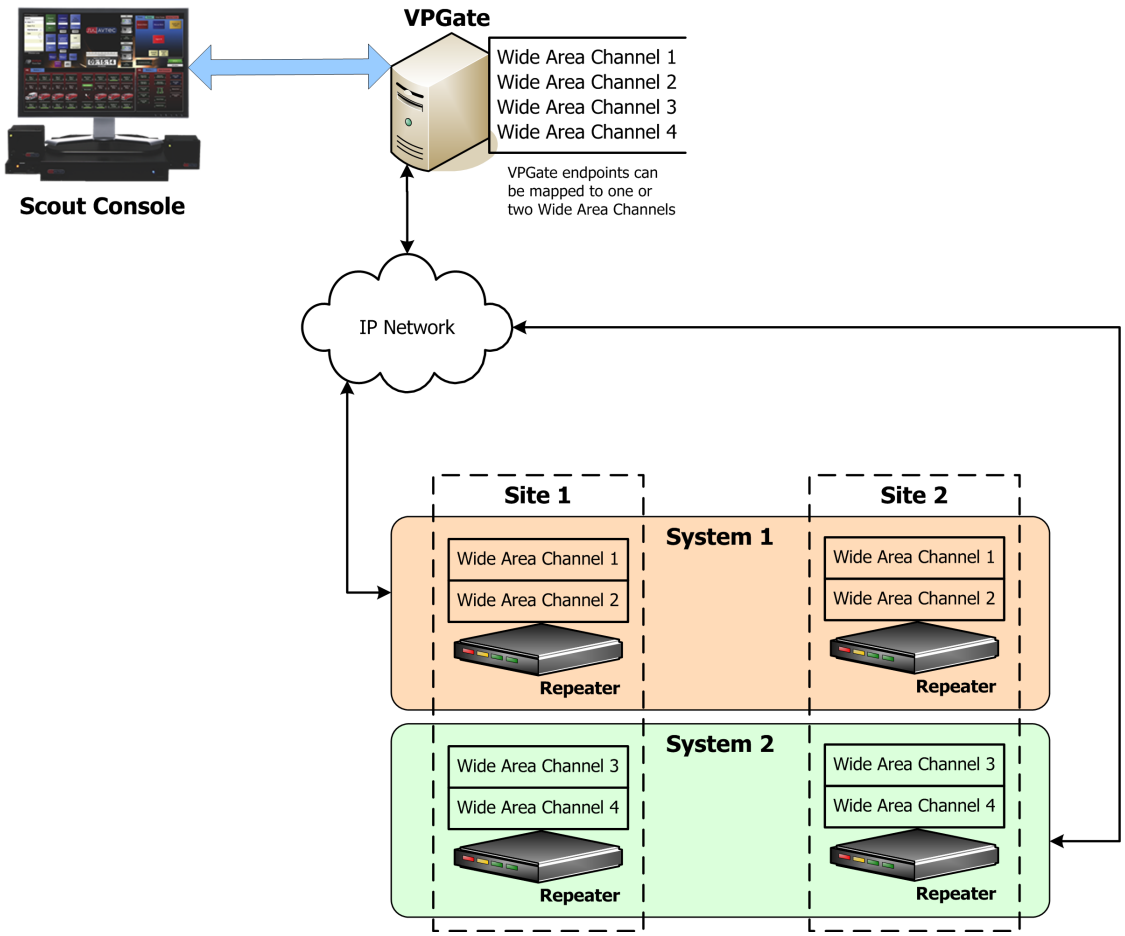
A MOTOTRBO™ IP Site Connect system consists of one or more MOTOTRBO™ digital repeaters configured to intercommunicate. All the repeaters in the system are peers of one another. Each repeater transmits RF-received voice and data packets over the IP network to all other registered peers in the system.

The Scout Console System interfaces with IP Site Connect through the VPGate MOTOTRBO™ IP Site Connect driver. The driver provides options for settings unique to the IP Site Connect system such as:

- Timing of keep-alive messages
- The Wide Area Channel (WAC) that the endpoint uses to register with the system
- The level for message propagation delay
- The Hang Time for group, unit-to-unit, and emergency calls

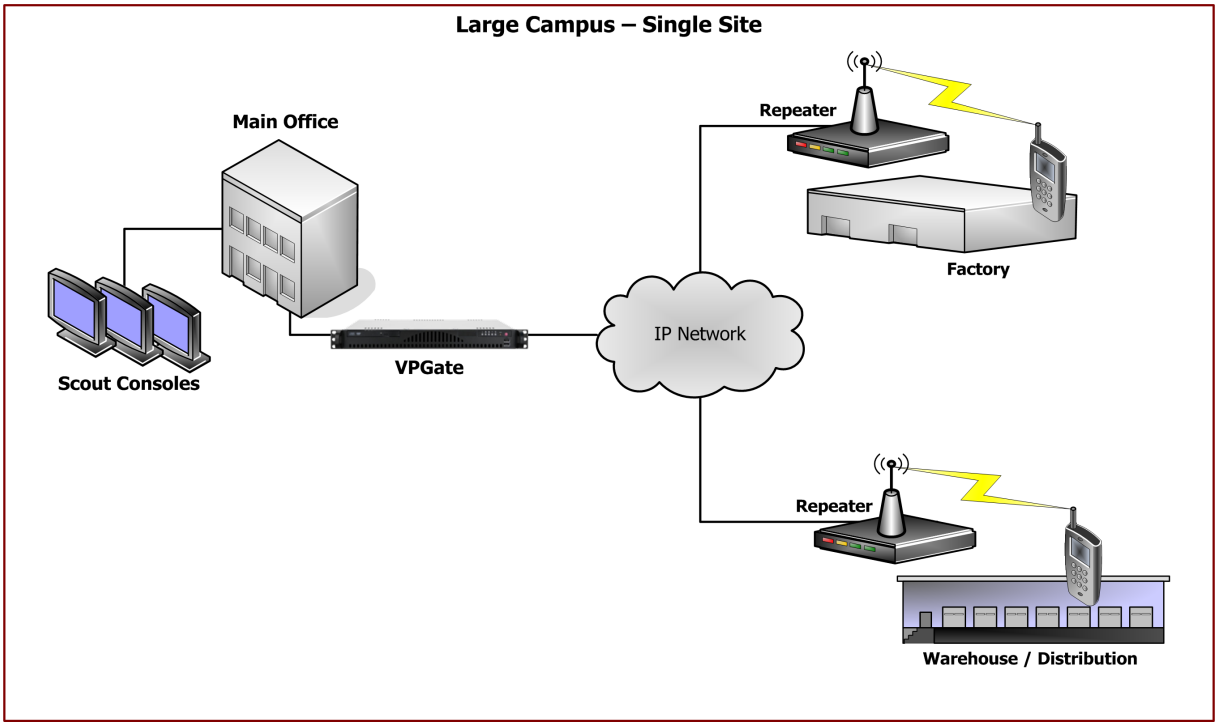
The following illustrations show some typical applications for Scout with IP Site Connect. Refer to Motorola's *MOTOTRBO™ System Planner* document for detailed information about different IP Site Connect configurations.

Note: Depending on the configuration, Scout uses at either one or two Wide Area Channel when connecting to a MOTOTRBO™ IP Site Connect endpoint.



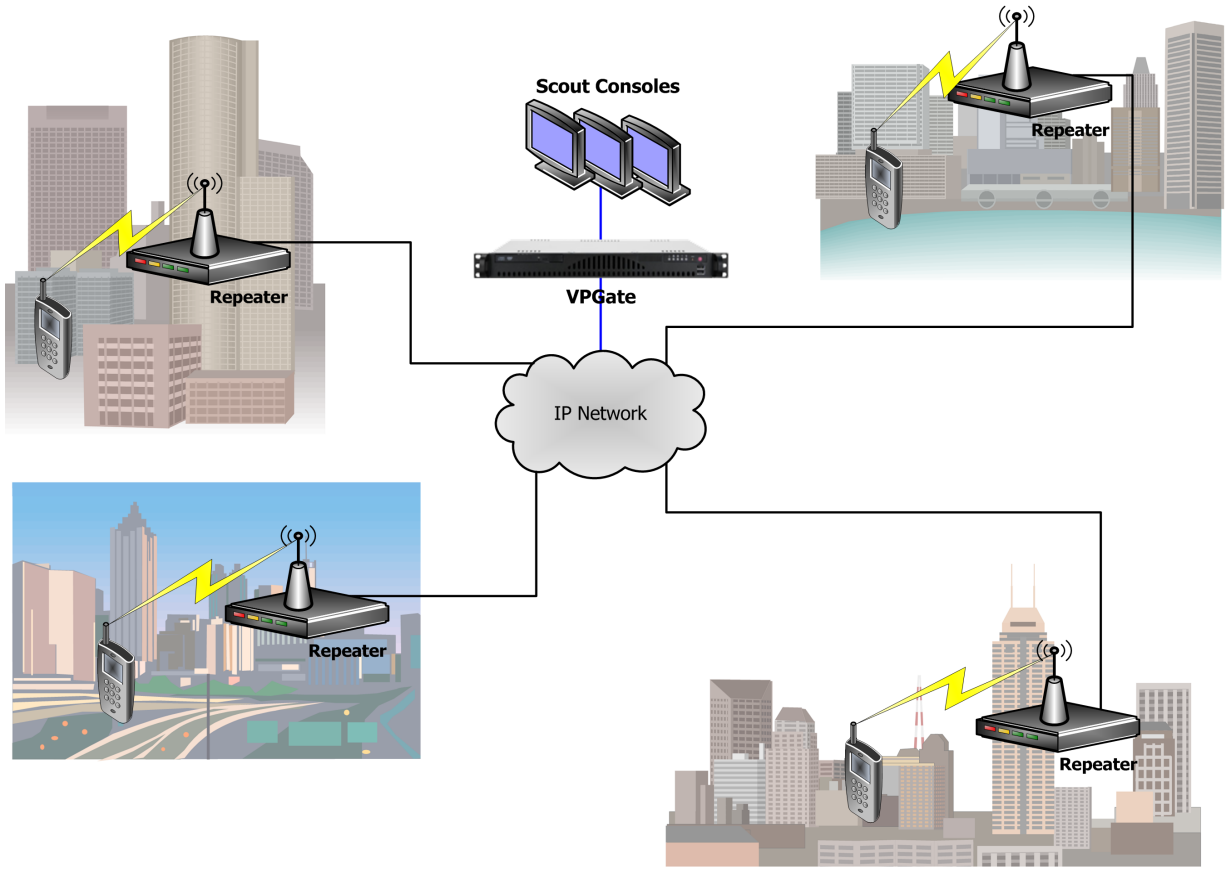
Large Campus or Single Site

Scout with IP Site Connect can also unify communication for a single site, whether its a single building or a large campus. The IP connection to Scout Consoles and multiple repeaters can provide seamless coverage in all areas.



Geographically Distributed Sites

The MOTOTRBO™ IP Site Connect solution supports a geographically distributed radio network, also called a *wide area system*, with multiple repeaters. With Scout Consoles in a single communication center an organization can coordinate activity in multiple remote locations.



Scalability

Scout systems using MOTOTRBO™ IP Site Connect are scalable from 1 to 100 console positions. Each IP Site Connect endpoint can have up to 32 separate channels or talkgroups defined and available for the Scout Console.

IP Site Connect can link up to 15 repeaters in an IP network to share voice and data communications for up to 100 users. If VPGate registers 2 Wide Area Channel slots, the maximum number of repeaters in an IP Site Connect system is reduced to 13. If sufficient IP Site Connect supplemental licenses are available, Scout can connect to multiple IP Site Connect systems.

In addition, if a customer uses a MOTOTRBO™ Connect Plus trunking system, in conjunction with IP Site Connect, Scout can communicate through both systems simultaneously.

Licensing

The MOTOTRBO™ IP Site Connect driver is licensed as a supplemental VPGate driver that requires its own USB hardware dongle. The driver does not operate properly without the dongle installed in a USB port on the VPGate system.

MOTOTRBO IP Site Connect License Model Number	Maximum IP Site Connect Endpoints
SFW-VPG-TRBO-IPSC-10	10
SFW-VPG-TRBO-IPSC-30	30
SFW-VPG-TRBO-IPSC-60	60
SFW-VPG-TRBO-IPSC-100	100

For every IP Site Connect endpoint configured on a VPGate system, one VPGate Category A license plus one Supplemental Driver license is used from your available license totals. VPGate Category A licenses are available in packages of 40, 80, and 160 endpoints.

VPGate Base License Model Number	Maximum Endpoints
SFW-VPG-L0-NR	20
SFW-VPG-L0	20
SFW-VPG-L1	40
SFW-VPG-L2	80
SFW-VPG-L3	160

Note: For each MOTOTRBO™ IP Site Connect license used, a corresponding Category A license is also used. For example, if you configure 10 MOTOTRBO™ IP Site Connect endpoints to your system, all 10 of your Category A licenses have been allocated.

For non-mission critical environments that do not require redundant VPGates, MOTOTRBO™ IP Site Connect is available in the following bundled packages:

Bundle	MOTOTRBO™ IP Site Connect Endpoint Licenses	Scout Console Positions
PKG-IPSC-110 PKG-IPSC-110-PCM PKG-IPSC-110-PCT	10	1
PKG-IPSC-120 PKG-IPSC-120-PCM PKG-IPSC-120-PCT	20	1
PKG-IPSC-210 PKG-IPSC-210-PCM PKG-IPSC-210-PCT	10	2

Bundle	MOTOTRBO™ IP Site Connect Endpoint Licenses	Scout Console Positions
PKG-IPSC-220 PKG-IPSC-220-PCM PKG-IPSC-220-PCT	20	2
PKG-IPSC-310 PKG-IPSC-310-PCM PKG-IPSC-310-PCT	10	3
PKG-IPSC-320 PKG-IPSC-320-PCM PKG-IPSC-320-PCT	20	3
PKG-IPSC-410 PKG-IPSC-410-PCM PKG-IPSC-410-PCT	10	4
PKG-IPSC-420 PKG-IPSC-420-PCM PKG-IPSC-420-PCT	20	4

Bundles with -PCM or -PCT suffixes include a console computer and LCD monitor.
PKG-IPSC-xxx-PCT bundles include a touchscreen monitor.

Refer to the VPGate Cut Sheet or contact your Avtec sales representative for more information about licensing for Scout and MOTOTRBO™ IP Site Connect endpoints.

Network Requirements

The MOTOTRBO™ IP Site Connect network can be a local area network (LAN) or a wide area network (WAN) connection provided by an Internet Service Provider (ISP). Most customer networks are a combination of both types. Scout always connects to an IP Site Connect endpoint using a Wide Area Channel slot.

Note: The network can not use a Proxy server that directs all IP devices to a home or logon page before they are allowed access to the WAN.

Jitter

IP Site Connect allows a jitter tolerance of 60 milliseconds (ms). If a delay of more than 60 ms occurs, audio quality begins to degrade. Scout allows for jitter ranging from 60 ms to 2.5 seconds.

Note: Packet loss and latency must be within the limits documented in the *MOTOTRBO™ System Planner* document from Motorola. The network can not use a dial-up connection because of inadequate bandwidth. It also should not use satellite Internet access, such as a VSAT system, due to unacceptable delays during transmission and reception.

Bandwidth

Sufficient bandwidth must be available on the IP network. A fully populated repeater network can require more than 700 kbps.

QoS

VPGate supports Differentiated Services (DiffServ) values for audio and control packets from the VPGate to the MOTOTRBO™ endpoint. This allows VPGate to assign a high priority to VoIP packets and prevent unwanted network delays.

Addresses and Ports

A static IP Address and UDP Port for the master repeater must be made available to all peer devices on the IP Site Connect system.

When a peer device registers with the master repeater, the network supplies the return IP address and UDP port of the peer device to the master repeater. The IP address and UDP port must then be made available to all other MOTOTRBO™ IP Site Connect devices on the system.

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